Technical Service Center (TSC)

Cost effectively developing innovative solutions to Reclamation's most complex water and power challenges

Draft Review Guidelines for Design Activities Performed by Non-Reclamation Entities

The TSC is developing a new document, *Review Guidelines for Design Activities Performed by Non-Reclamation Entities,* to align the scope of Reclamation's technical reviews on non-Reclamation design products to project complexity. These Guidelines will include a risk-informed matrix based on asset criticality and technical complexity. They will also define best practices for transparent oversight of Architect-Engineer (A/E) design work while preserving the Engineer of Record's responsibilities and ensuring critical quality assurance. The document is in the developmental stage, and reviews are being collected pursuant to SO 3446. Feedback is welcome on what should or should not be included in the document, as well as input on factors for measuring criticality and complexity.

Draft Proposed Outline and Risk Matrix Below.

Reclamation Design Standards

Reclamation Design Standards establish Reclamation technical requirements and processes to enable preparation of designs, documents, and reports necessary to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. Reclamation design activities, whether performed by Reclamation or by a non-Reclamation entity, must be performed in accordance with Reclamation design criteria and standards. Deviations from Reclamation criteria and standards shall be submitted in accordance with *Reclamation Manual Directive and Standard,* "Design Activities," FAC 03-03 Appendix C.

Reclamation's Technical Service Center (TSC) Director is responsible for establishing and maintaining, or identifying, design criteria and engineering and technical standards for all Reclamation design work. These criteria and standards are prepared, reviewed, and approved in a manner that provides an opportunity for input from Reclamation offices, industry organizations, and water and power customer organizations. (*Reclamation Manual Directive and Standard,* "Performing Design and Construction Activities," FAC P03)

A list of available design documents is available on the TSC website at:
https://www.usbr.gov/tsc/techreferences/designstandards-datacollectionguides/designstandards.html

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DRAFT Review Guidelines for Design Activities Performed by Non-Reclamation Entities

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Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; honors its trust responsibilities or special commitments to American Indians, Alaska Natives, Native Hawaiians, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Review Guidelines for Design Activities Performed by Non-Reclamation Entities

Prepared by:

Bureau of Reclamation
Technical Service Center
Denver, Colorado

U.S. Department of the Interior **Month Year**

Acronyms and Abbreviations

A/E	Architect-Engineer
ALARP	as-low-as-reasonably-practicable
ANSI/HI	American National Standards Institute/Hydraulic Institute
B/C	benefit-to-cost
BOD	Basis of Design
CMP	Comprehensive
CR	Comprehensive Review
D&S	Directives and Standards
DEC	Design, Estimating, and Construction
DOI	U.S. Department of the Interior
DS	Design Summary
DSAT	Dam Safety Advisory Team
DSO	Dam Safety Office
EAP	Emergency Action Plan
ECS	Enterprise Collaboration Services
eDRAWS	Electronic Drawing Repository and Automated Workflow Solutions
ESAM	Electronic Service Agreement Module
FA	Funding Agreement
FAC	Project Planning and Facility Operations, Maintenance, and Rehabilitation
FAR	Federal Acquisition Regulation
FDP	Final Design Process
FER	Field Exploration Request
Guidelines	Architect-Engineer Guidelines for Design-Bid-Build Projects
HVAC	heating, ventilation, and air conditioning
IGCE	Independent Government Cost Estimate
IMH	Information Management Handbook
Log	A/E Review Comment-Response Log
LOPP	Lease of Power Privilege
LT	Leadership Team
MCC	Motor Control Center
MS	Microsoft
NEPA	National Environmental Policy Act
OGA	Other Government Agency
O&M	operation and maintenance
OM&R	operation, maintenance, and replacement
P&A	Policy and Administration
PF	power factor
PM	Project Manager
PMP	Project Management Plan
PWS	Performance Work Statement
RA	Risk Analysis
Reclamation	Bureau of Reclamation

RFI	Request for Information
RM	Reclamation Manual
SA	Service Agreement
SCADA	Supervisory Control and Data Acquisition
SOD	Safety of Dams
SOP	Standard Operating Procedures
SOW	Statement of Work
SPR	Stakeholder's Project Requirements
TBE	task-based estimate
TL	Team Lead
TPEC	Technical Proposal Evaluation Committee
TRoF	Technical Report of Findings
TSC	Technical Service Center
TSCESASP	TSC Electronic Service Agreement Signature Process
VE	Value Engineering
VFD	variable frequency drive
VP	Value Planning
WBS	work break-down structure
WIIN	Water Infrastructure Improvements for the Nation Act
WOID	Work Order Identification

Symbols

$	dollars
%	percent

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Executive Summary

1.0 Introduction

These Guidelines were developed to aid Reclamation's review of engineering and design activities performed by non-Reclamation entities, such as Architect-Engineer (A/E) design teams. Reclamation's review of design packages from non-Reclamation design teams span the planning stages—preliminary, appraisal, and feasibility—through the final design stage.

1.1 Objectives

The objective of these Guidelines is to establish a framework for consistent and transparent engineering and design reviews by Reclamation for non-Reclamation design partners. All instances of designs by others, whether partner-led or Reclamation initiated contracts for A/E services, require government oversight and review. Projects may involve construction of new assets or modifications to existing assets and can be either authorized Reclamation projects or non-authorized projects. These Guidelines apply to projects delivered using the design-bid-build method.

When reviewing designs performed by others, the primary goal is to ensure Reclamation's overall mission needs are met. The depth of a review depends on Reclamation's role regarding title ownership of the assets, capital cost sharing, Reserved or Transferred Works status, future operation and maintenance (O&M) responsibilities, legislated requirements, public safety, impacts to Reclamation facilities and operations, procurement and construction support needs, and other project specific variables. These factors are used to identify Project Complexity based on Asset Criticality and Technical Complexity—key drivers for selecting the appropriate level of review.

The main purpose of a review is to:

1) confirm that Reclamation's overall project criteria are met and that the design does not harm Reclamation facilities or the public,
2) verify that the A/E design team has selected appropriate design standards, codes, and design criteria (national or Reclamation standards and guidelines), and
3) ensure that the design follows those standards, codes, and criteria (basis of design).

The Designer of Record is liable for the adequacy of the design.

1.2 Authorities, Policies, Directive and Standards

The following is a list of pertinent Federal Bureau of Reclamation (Reclamation) statutes and related follow-on components in the Reclamation Manual's[1] Policies and Directives & Standards that the Reclamation National Programs Office, TSC, and external partners should be familiar with when developing contracts for performing architect-engineer firm's design packages. These items will build the foundation upon which the design review is conducted.

1.2.1 Authorities

Depending on whether the proposed project assets are an authorized Reclamation project or a non-authorized project, see the related authority defined in pertinent Reclamation Manual Policies and Directives and Standards listed below.

1.2.2 Policies

CMP P05	Reclamation Value Program
FAC P02	Decisions Related to Dam Safety Issues
FAC P03	Performing Design and Construction Activities
FAC P09	Cost Estimating
FAC P10	Independent Oversight of Design, Cost Estimating, and Construction
IRM P01	Information Management and Technology Cybersecurity Program
IMH	Information Management Handbook

1.2.3 Directive and Standards

CMP 06-01	Reclamation Value Program
CMP 09-01	Water and Related Resources Appraisal and Special Studies
CMP 09-02	Water and Related Resources and Feasibility Studies
CMP 09-04	Planning for Major Rehabilitation and Replacement of Existing Assets
CMP 10-02	Fee-for-Services Business Practices for Technical Services Work
CMP 10-03	Workload Distribution Practices for Technical Services Work
CMP 10-04	Collaboration with Customers Regarding Technical Services Required for Work on Existing Bureau of Reclamation Facilities
CMP 10-05	Substantial Changes on Transferred Works
CMP 11-01	Title Transfer for Reclamation Project Facilities
FAC 03-01	Maintenance of Design and Construction Technical Capabilities
FAC 03-02	Construction Activities

[1] Source (accessed February 1, 2024): https://www.usbr.gov/recman/

FAC 03-03	Design Activities
FAC 04-08	Lease of Power Privilege (LOPP) Processes, Responsibilities, Timelines, and Charges
FAC 09-01	Cost Estimating
FAC 09-02	Construction Cost Estimates and Project Cost Estimates
FAC 09-03	Representation and Referencing of Cost Estimates in Bureau of Reclamation Documents Used for Planning, Design, and Construction
FAC 10-01	Identifying Design, Cost Estimating, and Construction Projects
IRM 04-01	Radio Communications Program
PEC 05-02	Contracts for the Transfer of Operation, Maintenance, and Replacement Responsibilities for Federal Facilities
SLE 02-01	Identifying and Safeguarding Controlled Unclassified Information (CUI)
RCD 05-01	Information Management

1.2.4 Definitions

The following is a list of standard definitions that can be used to ensure the Reclamation review team and the design team terminology is consistent and transparent to all parties when developing contract documents and performing reviews of submittal packages.

A/E Design Team: An architect-engineer (A/E) firm's technical services team made up of various architectural and engineering disciplines retained to provide planning-level and final designs of a proposed project.

A/E Review Team: A Reclamation technical services team made up of Reclamation employees to review the A/E Design Team deliverables.

Authorized Project Feature: A feature of an Authorized Reclamation Project, such as a dam, spillway, powerplant, canal, pumping plant, or water treatment plant.

Authorized Reclamation Project: Water supply or water delivery project constructed or administered by Reclamation under Federal Reclamation laws authorized by Congress for Reclamation to construct and operate.

Customer: A water user or electric utility which has an active repayment, water service, or power service contract with Reclamation; an electric utility which has an active contract with a Federal power marketing agency for energy and/or capacity from a Reclamation-owned hydropower facility; or a non-Federal operating entity (e.g., a joint powers authority) which has assumed responsibility on behalf of multiple water users, via a contract with Reclamation, for operating and maintaining (O&M) a Reclamation project or features thereof (see Reclamation Manual [RM] Directives and Standards [D&S] CMP 10-04 "Collaboration with Customers Regarding Technical Services Required for Work on Existing Bureau of Reclamation Facilities" for further discussion).

Dam Safety Advisory Team (DSAT): An independent group of experienced, senior engineers and scientists from TSC, specialists from other disciplines on an as-needed

basis to address specific issues. This team reviews key findings and decisions from Modification Decision Analysis studies, Corrective Action studies, and modification designs. Other topics that were suggested that the DSAT could provide advice on included the need for outside consultants, prioritization of and the need for risk reduction efforts, help with framing the basis for Dam Safety decisions and the overall Dam Safety Program process, and on needs for research and development in decision support systems.

Designer of Record: Synonymous with Engineer of Record, the person responsible for the technical adequacy of its design and authorized to sign, stamp, and seal the specification package design documents. The role also ensures compliance with all contract requirements and local codes. The Designer of Record typically establishes and oversees the design Quality Assurance program.

Design-Bid-Build: Design-bid-build is the industry traditional construction delivery method. Design and construction are sequential and are performed by at least two entities under separate contracts. This method is addressed in detail in Federal Acquisition Regulation (FAR) Part 36[2] "Construction and Architect-Engineer Contracts" Subpart 36.2 "Special Aspects of Contracting for Construction."

Design-Build: Reclamation occasionally uses the "design-build" delivery method, which means combining design and construction in a single contract with one contractor. A variation is known as the "two-phase design-build" selection procedure. A limited number of offerors (normally limited to five or fewer) are selected during Phase One to submit detailed proposals for Phase Two. This method is addressed in detail in FAR 36 "Construction and Architect-Engineer Contracts" Subpart 36.3 "Two-Phase Design-Build Selection Procedures."

Federal Acquisition Regulation (FAR): A set of rules regarding government procurement in the United States.

Federal Appropriation: A law of Congress that provides an agency with budget authority. An appropriation allows the agency to incur obligations and to make payments from the U.S. Treasury for specified purposes.

Lease of Power Privilege (LOPP): A LOPP is a contractual authorization issued by Reclamation to a non-Federal entity to use a Reclamation facility for electric power generation consistent with Reclamation project purposes (see RM D&S FAC 04-08 "Lease of Power Privilege [LOPP] Processes, Responsibilities, Timelines, and Charges" for further discussion).

LOPP Applicant: A LOPP Applicant is a non-governmental or quasi-governmental entity.

[2] Source (accessed February 1, 2024): https://www.acquisition.gov/far/part-36

Non-Authorized Project: Water supply or water delivery project constructed or administered by others and not under Federal Reclamation laws nor authorized by Congress for a third party to construct and operate. When the design feature may affect risk of a Reclamation asset, Reclamation may, at its discretion, perform an independent consequences evaluation, risk analysis, and A/E review of the design of a Non-Authorized Project feature.

Non-Reclamation Design Partners: Other government agencies, customers, or individuals working with Reclamation to prepare designs or provide regulatory reviews of designs (see Bureau of Reclamation's Information Management Handbook [IMH], U.S. Department of the Interior, April 2023) [3]. This definition extends to contractors hired by Reclamation or by these agencies, irrigation districts, or individuals to assist in design-related activities.

Project Manager (PM): The person assigned by the Reclamation Program Office to achieve project objectives and to deliver the project on schedule, within budget, and to the appropriate scope. This is often a staff member of the field office, area office, or regional office and is trained in formal PM practices.

Reclamation Manual (RM): The RM consists of a series of Policies and D&S. Collectively, these releases assign program responsibility and establish and document Reclamation-wide methods of doing business. All requirements in the RM are mandatory for Reclamation employees.

Reserved Works: Those facilities owned by Reclamation where Reclamation has retained responsibility for carrying out O&M activities.

Service Agreement (SA): A SA documents the mutually agreed-upon scope, schedule, project risk, and budget for a specific package of engineering and/or other technical services needed by the Reclamation Program Office and to be performed by the Reclamation service provider. The agreement reflects all or part of the work identified in the Statement of Work (SOW) and documents a commitment by the service provider to execute the work as indicated, within the agreed-upon schedule and budget, as well as a commitment by the Program Office to fund that work (see RM D&S CMP 10-02 "Fee-for-Service Business Practices for Technical Services Work").

Technical Services Work: Technical services work means engineering and other services including, but not limited to, concept engineering; data collection and analysis; formulation of alternatives; value engineering/analysis studies; engineering designs, drawings, and specifications; cost estimating; hydrologic, geologic, seismic, environmental, social, economic, and cultural analyses; construction management (i.e.,

[3] Source (accessed February 1, 2024): https://intra.usbr.gov/eimt/servicestrat/img.html

technical support for procurement of construction services, construction contract administration, inspection, engineering support, and completion of final construction reports, including as-built drawings); and commissioning/post-construction monitoring (see RM D&S CMP P10,"Bureau of Reclamation's Business Model for Managing Technical Services" for further discussion).

Technical Service Center (TSC): The TSC is Reclamation's engineering and science organization, providing specialized services to protect public safety and support the efficient operation of Reclamation projects and facilities. The TSC Director is responsible for establishing, maintaining, or identifying design criteria and engineering and technical standards for all Reclamation design work. These criteria and standards are prepared, reviewed, and approved with input from Reclamation offices, industry organizations, and water and power customers.

Title Transfer: Public Law 116-9, Title VIII, Subtitle A (43 United States Code [U.S.C.] 2902, et seq.), authorizes Reclamation to transfer title to certain Federal facilities to non-Federal entities (i.e., customer) upon the completion of payment of all capital costs. Facilities not eligible for title transfer under 43 U.S.C. 2902, et seq. may only be transferred following specific authorization of the title transfer by the United States Congress. The transfer of title divests Reclamation of responsibility for the operation, maintenance, replacement (OM&R), management, regulation of, and liability for Federal interests in lands and project facilities (see RM D&S CMP 11-01 "Title Transfer for Reclamation Project Facilities" for further discussion). The transfer of title to dams will also result in a change in regulatory oversight and associated requirements, usually to the state jurisdiction for dam safety requirements.

Transferred Works: A Reclamation project facility where the OM&R responsibility of a facility is transferred to a non-Federal entity (i.e., customer, third-party water authority, etc.) under the provisions of a formal O&M transfer contract per RM D&S PEC 05-02 "Contracts for the Transfer of Operation, Maintenance, and Replacement Responsibilities for Federal Facilities." A transfer of O&M contract does not transfer title and Reclamation retains title to the facility.

2.0 Roles and Responsibilities

2.1 Reclamation Area Offices

2.1.1 Area Office

2.2 Reclamation Program Offices

2.2.1 Dam Safety

2.2.2 Power

2.3 Reclamation Design Review Team

The Design Review Team is formed in accordance with RM D&S CMP 10-03, "Workload Distribution Practices for Technical Services Work".

2.4 Reclamation Partner/Customer

2.5 Engineer of Record

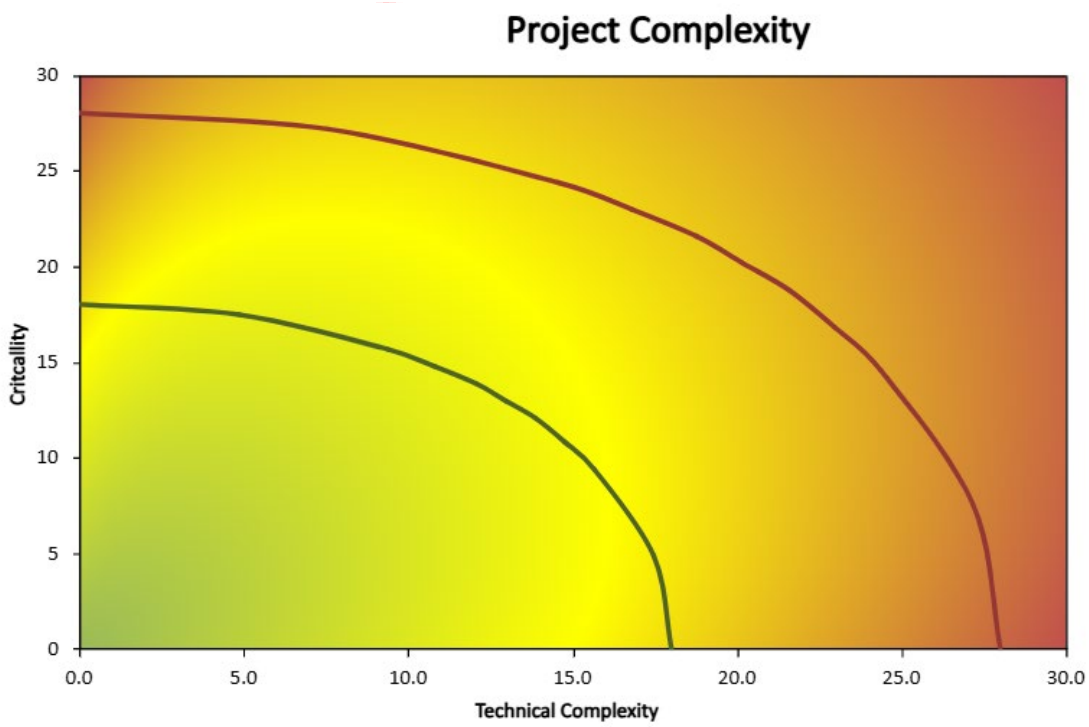
3.0 Types of Architect-Engineer (A/E) Review

3.1 General Review Process

3.2 Determining Project Complexity

The following information will help inform the level of effort for Reclamation's technical review based on Project Complexity for projects that have A/E design components (whether contracted by Reclamation or Reclamation Stakeholders). The scoring matrix below serves as a tool to

guide initial communication on the review effort, aid in establishing A/E service contract documents, and set expectations throughout the project.



This risk-informed framework uses a weighted scale for each evaluation factor, scored from 1 to 5, with 5 being the most complex projects on Reclamation's most critical infrastructure. Review Level I is the most basic, while Level III involves progressively more detailed reviews and longer review durations as complexity increases.

Table 1: *Draft* Factors for Measuring Project Complexity

Factor	Score (1-5)	Definition
Asset Criticality		
Ownership Responsibilities		
Type of Facility		
Project Priority		
Design stage		
Funding Source		
Asset function within the greater Reclamation Project (redundancy, impact to other facilities)		

Technical Complexity		
Volume of data/analyses/work		
Regulatory/Litigation or Property Risk		
Safety		
Technical Rigor		
Uniqueness (Specialty and Niche)		
Experience and QA/QC Requirements		
Contract Cost		
Cross-functional work requirements		

3.3 Review Methodology

3.4 Service Agreements

4.0 Review Requirements

4.1 Review Package Submittal Requirements

4.2 Technical Considerations

4.3 Review Comments

4.4 Design Acceptance Process

5.0 Construction Review Team Responsibilities

6.0 References

One author:
Last Name, First Name or Initial(s). Date. “Title.” Publication Information.

Two authors:
Last Name, First Name and First Name Last Name. Date. “Title.” Publication Information.

Three or more authors:
Last Name, First Name, First Name Last Name, and First Name Last Name. Date. “Title.” Publication Information.

Multiple publications, same author(s):
If more than one publication has the same author, or the same combination of authors listed in the same order, a line (_____) equivalent to 5 underlines is used to represent the same author(s).

Journal/Magazine Article:
Author(s). Date. Title of article (in sentence case). *Name of Journal or Magazine (headline case in italics)*, volume (month/quarter of publication [issue]):pages.

Examples, respectively:

Black, Andrew. 2020. “Overview of Hoover Dam.” Bureau of Reclamation, Technical Service Center, Denver, Colorado. In the body text, this would be cited as “(Black 2020)”.

Black, Andrew and Steve Cole. 2020. “Overview of Hoover Dam, Technical Memorandum No. SOD-NIMB-311.” Bureau of Reclamation, Technical Service Center, Denver, Colorado. In the body text, this would be cited as “(Black and Cole 2020)”.

Black, Andrew, Steve Cole, and Robert Stone. 2020a. “Overview of Hoover Dam.” Summary Report 8000-78-24, U.S. Department of the Interior, Bureau of Reclamation. In the body text, this would be cited as “(Black et al. 2020a)”.

_____. 2020b. “Another Overview of Hoover Dam.” Summary Report 8000-78-25, U.S. Department of the Interior, Bureau of Reclamation. In the body text, this would be cited as “(Black et al. 2020b)”.

Grayjek, Richard. 1991. The lost nation. *Southern Culture*, 6:17–22.

Appendix A